A Study of Local Vendors' Views of Planning Global Distribution Systems: Examples from Travel Information Industry in Japan and Korea

Don D. H. Lee
William Y. C. Wang
Paul T. M. Leong
Business Information Systems
Faculty of Business and Law
Auckland University of Technology
Auckland, New Zealand
Email: xgp9028@aut.ac.nz; wiwang@aut.ac.nz; pleong@aut.ac.nz

Abstract

Global Distribution Systems (GDS) has played a pivotal role as electronic distributors in the travel industry. Although there are two types of GDS vendors geographically –local and worldwide, almost all studies focus on worldwide GDS and do not address the differences. With theoretical lenses of Inter-organisational Systems (IOS), Systems Development Life Cycle, and home-region orientation, this research-in-progress paper is to address three research agenda: (i) a literature review on GDS in the context of IOS; (ii) a theoretical relationship between multi-nationals' IOS and their home-region oriented IOS operations; and (iii) a proposal of research question and methods for applying to GDS planning between local and worldwide vendors. From providers' perspective, a multiple methods approach combining a survey and case studies will be conducted with the Japan-Korea based GDS vendors. This study aims to contribute to a gap in the knowledge of Information Systems and the GDS-related travel information industry.

Keywords

Global Distribution Systems, Inter-organisational Systems, Planning, Home-region Oriented, Travel Information

INTRODUCTION

Since the early 1980s airlines, travel intermediaries, banks, retailers, and health care companies have been investing and participating in a growing number of Inter-organisational Systems (IOS) (Hadaya and Pellerin 2010). IOS refers to an automated information system shared by two or more companies (Johnston and Vitale 1988). In the travel industry, there are colossal and centralised IOSs that electronically handle travel booking transactions, known as Global Distribution Systems (GDS). GDS is electronic reservation platforms that evolved from airlines' computer reservation systems (CRS) about half a century ago (BCD Holdings 2007; Chismar and Meier 1992). GDS vendors offer virtual real-time connectivity between thousands of travel inventory suppliers (e.g., airlines, hotels, and car rentals) and millions of retail sellers (e.g., B2B/B2C travel agents) of travel product all over the world (See Figure 1 on the next page). For the past two decades, GDS has been progressively consolidated by three US- and Europe-based companies that own their central systems for the GDS services. As major GDS vendors, they have enlarged their worldwide GDS operations by establishing own regional headquarters and joint-venture companies in strategic local markets (Radulovic 2013).

Japan and Korea where four different local GDSs have dominated are identified as unique travel markets (Ma et al. 2007; Mason 2008). It is interesting to note that the three major GDS vendors supply the joint-venture companies in Japan and Korea with their worldwide distribution backbone. More specifically, the Japan-Korea based GDS vendors are licensed local vendors –represented as national marketing companies– of the US and European GDS products for travel agencies, including access to the worldwide network. However, previous GDS-related researches only focused on the products of the worldwide GDS vendors and overlooked the existence of such local vendors. In addition, few academic papers have addressed the question of interoperable practice between the two kind distributors classified into region (Yun and Lee 2005).

The SCOPUS database lists 173,276 papers published for the last 20 years between 1994 and 2014 with "Information Systems" as a keyword. For the same time period, abstract/title/keywords to do with "Global Distribution Systems" including "Computer Reservation Systems" occur merely seven in 16 papers out of the 173,276 cases, representing much less than one percentage of the IS-related researches. By contrast, "Enterprise

Resource Planning" and "Customer Relation Management" show 1,477 and 318 listings respectively, several scores times larger than GDS. Moreover, there is little geographical topics related to the local GDS vendors and their system development in the literature of Information Systems (IS) are found from the database.

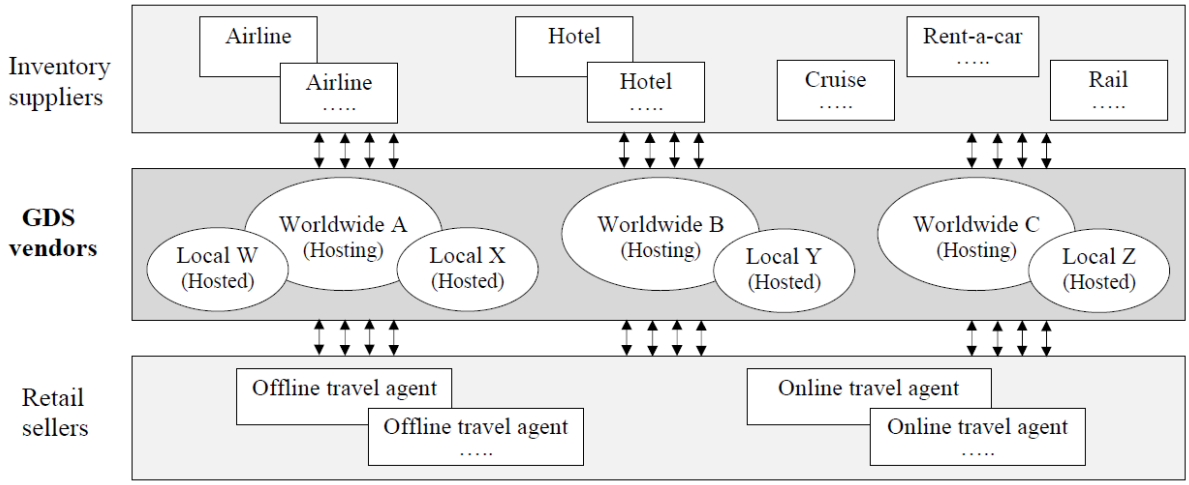

Figure 1: Overview of Global Distribution Systems Connectivity

According to the Systems Development Life Cycle (SDLC), "planning is the first and most critical phase of any systems development effort an organisation undertakes" (Baltzan 2012, p. 343). IS planning is one of the top concerns for practitioners and has attracted researchers' attention to study its different aspect and context (Amrollahi et al. 2013). Ibbott and O'Keefe (2004, p. 135) assert that "planning is more vital in IOS than in other IS because of the need to convince and de-risk more than one organisation". Nevertheless, IOS planning suffers from a paucity of empirical study due to complexity of inter-organisational study, tendency of individual documentation, and lacks of theory behind (Finnegan et al. 2003; Makipaa 2011). Particularly, the planning phase is a strong challenge to multi-national enterprises (MNE); the different levels of international integration and local responsiveness are the primary causes (Mohdzain and Ward 2007).

GDS vendors are MNE, because they work multi-nationally (Roche 1996). Rugman and Verbeke (2004; 2005) as well as Wolf et al. (2012) provide considerable evidence in International Business (IB) that most MNEs do not spread their activities (e.g., sales, assets, and transactions) globally; they limit their geographic scope locally. Such phenomenon is named as home-region orientation (HRO) that refers to the tendency of MNE's concentrating their business activities in countries which belong to the geographical region of their headquarters. Therefore, it is assumed that the US/Europe-based GDS vendors are highly probable to be home-region oriented; then, to the extent that this assumption is acceptable, such a propensity may affect their system development for the locally-used GDS in many ways.

This explanatory study questions as follows: How planning for the local GDS development is practiced between the major GDS owners and the local GDS vendors in Japan and Korea? More specifically, how do the two parties co-ordinate and cooperate for planning the local GDS? And what are the potential factors that affect their GDS planning? To puzzle these out, a multiple methods approach combining a survey and case studies will be attempted with the Japan- and Korea-based GDS vendors.

On the basis of transaction cost theory and neo-institutional theory commonly underpinning MNE's IOS and HRO, this research-in-progress paper is structured in the following sections. The first section is a literature review on GDS in the context of IOS. In the next two sections, IOS is briefly reviewed, followed by IOS planning. The fourth section highlights two core supporting theories on IOS and HRO. In the following section, a set of research questions and research methods is outlined and proposed for gathering data. Finally, a conclusion remark is presented.

LITERATURE REVIEW

An extensive literature review covers four main subjects: an overview of GDS, an outline of IOS, a report of IOS planning focused on MNE's, and a theoretical framework on IOS and HRO.

Global Distribution Systems

GDS is the name as a particular type of IOSs; it does not mean to be used in a global setting. GDS works as an intermediary system for all types of travel solutions and tourism products. The travel industry utilises as GDS to increase efficiency in exchanging travel information and offering competitive distribution channels (Buhalis and Jun 2011). The advances of IS and evolution of travel service automation have led to the development of GDS, recognised as a worldwide computerised reservation network that electronically connects the tourist offer with the demand (Radulovic 2013). In 1953 American Airlines initiated cooperation with IBM and after a decade launched Semi-automated Business Research Environment (SABRE), which was the first-ever airline reservation system. Due to the increasing number of airlines, combining the different CRS became mandatory in the 1970s (Merten 2007; Sheldon 1997). The distribution of products and services available through the CRS developed into the next unique challenge for the industry. As a result of a continuous concentration process, a number of airline mainframe computers were directly connected. This marked the transition of CRS from solely internal systems to GDS as a gigantic IOS for the tourism sector (Chismar and Meier 1992; Inkpen 1994). In the meantime, leading European airlines and hotels operating their own CRS also started developing together an independent GDS catering to the needs of European travel market (Sheldon 1997).

As the handling of information is critical to business for the travel intermediaries, the range of functions of the GDS product is of fundamental importance (Merten 2007). Sheldon (1997, p. 42) states that "the more information the travel intermediary can access electronically, the more timely, accurate and efficient service can be provided to the client". Consequently, the entire travel distribution process should be synchronised inter-organisationally between each system subscribing to the GDS and the GDS central systems that include real-time link to the participants' inventory, back-office integration and electronic data interface (Merten 2007).

GDS today also plays a significant role for hospitality distribution as hitherto it has been providing the key mechanism for distributing hotel accommodation to travel agencies around the world (BCD Holdings 2007). In addition, GDS enables the Internet-based intermediaries to sell all forms of travel (Kang 2006). Since the early 2000s, the major GDS vendors have migrated online database and application programs from legacy computers to interoperable open architecture and storage devices accordingly. To enlarge technological competitiveness and efficiency, and to cater for the functional requirement from strategic local markets, they have delivered targeted management tools to specific countries and the local-friendly desktop software (Yun and Lee 2005).

Some GDSs act on a worldwide basis and the others limit their business scope within a country or a specific region (See Table 1 below). By increased international market reach, all GDS vendors are not represented in important markets. Three US- and Europe-based GDS owners hold a dominant market position as distribution partners of airlines, hotels, and intermediaries in the primary markets (Kang 2006; Merten 2007; Sheldon 1997). An Asia-pacific regional vendor, the Japan-Korea based four distributors, and a Chinese monopoly player are providing travel agencies with GDS products, including customised access to the worldwide GDS. However, their business size is considerably smaller than the worldwide players' (World Trade Organization 2007). More interestingly, by strategic partnership the GDS services to the Japanese and Korean travel markets rely on the infrastructure of US/European GDS products and the local vendors do not operate their own central systems and distribution network. Nonetheless, there is little research to be referred to this headquarters-affiliate relationship to the GDS operation and their multi-cultural development practices including system planning; this study seeks to address such a deficit.

Table 1. A Snapshot of Worldwide/Regional/Local GDS Vendors

GDS	Year established (Web address)	Systems ownership	Headquarters	Primary markets
AMADEUS	1987 (amadeus.com)	AMADEUS	Spain, Europe	North & South America, Europe, Oceania. Middle Asia (worldwide)
GALILEO	1987 (galileo.com)	TRAVELPORT*	New Jersey, US	
SABRE	1953 (sabre.com)	SABRE	Texas, US	
WORLDSPAN	1990 (travelport.com)	TRAVELPORT*	Georgia, US	
ABACUS	1988 (abacus.co.kr)	SABRE (hosted)	Singapore	Asia-pacific (regional)
TRAVELSKY	2000 (travelsky.net)	TRAVELSKY	Beijing, China	China (local)
AXESS	1992 (axess.co.jp)	TRAVELPORT (hosted)	Tokyo, Japan	Japan (local)
INFINI	1990 (infini-trvl.co.jp)	SABRE (hosted)		
TOPAS	1987 (www.topas.net)	AMADEUS (hosted)	Seoul, Korea	Korea (local)
AAI	1991 (abacus.co.kr)	SABRE (hosted)		

* TRAVELPORT is the owner of two different GDSs – GALILEO and WORLDSPAN; but the GDSs are still separate brands each other.

Source: Synthesised from Kärcher (1997), Merten (2007), and Yun and Lee (2005)

Inter-organisational Systems

The definitions of IOS have been changed over time (See Table 2 below). The term IOS was born in the early 1980s, as Barrett and Konsynski (1982) used the term Inter-organisational Information Sharing Systems for the first time. Cash and Konsynski (1985) first coined the term IOS to refer to an automated information system shared by two or more organisations (Lai 2007). The role of IOS is enabling organisations to gain competitive advantage and improve the efficiency of their transactional functions, by transferring instantaneous computer-to-computer information in a set of standards (Grover 1993).

Table 2. The Definitions of IOS over Time

Definition of IOS	Authors
information systems that link one or more firms to their customers or their suppliers, and facilitate the exchange of products and services	Bakos (1991)
infrastructure which constitutes of a large number of application and/or organisation-wide information systems, spans over at least two organisations, and is designed to inform	Kanellis and Paul (1997)
a network-based IS that extends beyond traditional enterprise boundaries... permitting information access to other organizations	Hong (2002)
information systems that facilitates the exchange of products, services and information between firms	Han et al. (2008)
a set of practices residing in separate organizations but connected through a special type of material boundary object	Reimers et al. (2010)

Source: Synthesised from Vaidya (2012)

Lee et al. (2005) and Turban et al. (2008) develop Grover's argument further that IOS provide benefits to the multi-national organisations by (i) building barriers to competitive entry, (ii) increasing switching cost for customers, and (iii) balancing of power in supplier relationship. In contrast, the task of any multi-national IOS seems complicated. Due to intense competition in the market, the use of IOS has become increasingly important for organisations (Geri and Ahituv 2008; Kurnia and Johnston 2000). Furthermore, IOS planning can be even more complex when IOS works multi-nationally because of the differences in cultures, languages, currencies, economics, institution, and regulations among parties in different countries. IOS involves that all participating members co-ordinate their efforts and cooperate with each other. It requires substantial internal operations and efforts for IS development, and has significant impact on the organisation. These participants may have complex business relationships between the multi-national firms and trading partners, resulting in a number of social and political factors that influence IOS planning (Finnegan et al. 2003).

Planning Inter-organisational Systems

IOS planning has many benefits (Nelson and Shaw 2003). The SDLC specified by International Electrotechnical Commission describes the overall process for developing IS: planning, analysis, design, development, testing, implementation, and maintenance. According to the SDLC, the planning phase involves determining project goals and high-level plan. Marshall and Mckay (2002) highlight that the head phase can help organisations use IOS to (i) carry out existing business objectives and activities; (ii) assess the impact of investment on IOS, (iii) formulate organisational redesign; and (iv) define new technological polices. IOS planning differs from planning for internal IS; it deals with different organisational structure, diverse business strategies, technological interoperability, and cooperative issues (Finnegan, Galliers and Powell 2003).

Planning IOS for multi-nationals needs the extra procedure of identifying a portfolio of IOS applications that integrate organisational or/and inter-organisational process and provide organisation with capabilities to enhance linkage between the IOS-using partners in different countries (Lee et al. 2005). Despite this interest, there has been little empirical research studying IS planning in multi-nationals particularly at the subsidiaries level (Goyal 2011; Mohdzain and Ward 2007). Since the mid-1990s a number of studies consider the particular topics of MNE's IOS planning but largely from headquarters perspectives. The early works discussing important issues of IOS planning in the multi-national environment is Roche's (1996). Before his research, most of the IOS-related studies in the past were within a domestic context.

Roche (1996, p. 132) posits that "the complexity and risks involved in planning for IOS in multi-nationals can also be caused by resistance from foreign subsidiaries and the disparity of available solutions across the different

countries". MNE is major adopters of IOS to improve their worldwide operations. Not only they engage the most advanced application and technologies, but have by far the largest geographical scale and scope in their IOS operations (Roche 1996). Multi-national organisation is composed of different groups, pursuing different goals, and promoting different interests (Bunduchi et al. 2008). Thus, if an MNE focuses its business on a local market or a specific region, heterogeneity affecting its IOS should be co-ordinated to decrease the complexity of IOS planning. Roche (1996) and Wolf et al. (2012) define heterogeneity in a different way. From the IB aspect, heterogeneity is defined as in differences in cultures, languages, economics, business practices, and processes across different location. In the IS area, whereas, heterogeneity refers to a diversity of operating systems, architecture, middleware, data structure, application sources, and infrastructure (e.g., data, structural, semantic, and schematic heterogeneity). They are bound together by common interests that heterogeneity among stakeholder has significant impact on the co-ordination of decision process. Therefore, heterogeneity co-ordination in multi-national IOS environment is a matter of great importance.

Lee et al. (2005) demonstrate that environmental factors (e.g., environmental uncertainty and partners' influence) and organisational factors (e.g., CEO/CIO relationship and IOS maturity) significantly influence IOS planning. In consequence of the examination, it is identified that IOS planning success has two constructs: planning alignment and improvement in planning capability that primarily affect transactional efficiency and competitive advantages. Mohdzain et al. (2007) examine IOS planning in MNE from the perspective of the subsidiaries. The study's main focal point on IOS planning is to control cost and achieve scale economies. Interestingly, the research reveals that owing to the dominant role of IS, the subsidiary managers are not much satisfied with the firms' IOS planning. Mohdzain et al. (2007) also discover that co-ordination of global activities across the subsidiaries, integration of local responsiveness, and the configuration of business distinctiveness are the key organisational determinants to the planning approach. In contrast, some studies focus on technological capabilities of IOS planning. As critical elements through the planning stage, for instance, authentication, security, system integration, stable standards, application compatibility, and data communication are considered (Vaidya 2012). These technological factors result in lower total cost of procurement, higher return on investment, and faster implementation. Likewise, the technological factors are enablers to reduce transaction costs dramatically and to support co-ordination and collaboration mechanisms (Vaidya 2012).

Theoretical Relationship between Inter-organisational Systems and Home-region Orientation

MNE is a business group of the major IOS adopters (Roche 1996). GDS is a type of multi-national IOS (Raymond and Bergeron 1997). IOS for MNE is a topic in which numerous theories have been tested and where no single theory has dominated (Robey et al. 2008). Rugman and Verbeke (2004; 2007) advocate that HRO refers to the tendency of MNE to concentrate activities in countries, which belong to the region of their headquarters. Similarly, Banalieva and Dhanaraj (2013) confirm that HRO is the propensity of a firm to expand within the home region –home country and region, as opposed to outside the home region and drives the expansion strategies of a firm and thus, dictates a firm's geographic scope. Based on transaction cost theory (TCT), key internal and external factors influencing HRO can be recapitulated as follows:

- Internal factors: Technologies, knowledge, innovative processes, and market-/sales-related skills that are firm's abilities to connect its firm-specific advantage
- External factors: Institutional diversity, customer demand, human capital, natural resources, and social infrastructure that are used as country-specific advantages provided by foreign locations

Rugman and Verbeke's (2004; 2005; 2007) claim to suggesting HRO rests on the assumption that the geographical scope of an MNE is a result of its ability to connect its firm-specific advantages in a useful manner with country-specific advantages provided by foreign locations. Namely, an MNE's success does not result from the mere existence of firm-specific advantages; instead, it stems from the MNE' ability to adjust its firm-specific advantages to the conditions that exist in the respective host market (Wolf et al. 2012). TCT, which is also one of the economics oriented IS theories (Madlberger 2012) views IOS as governance structures and asset specificity to control three transaction costs –information, negotiation, and monitoring costs (Williamson 1981). Transaction cost economies of scales and learning curve effects show that IOS may (i) decrease external and internal co-ordination costs; (ii) increase operational efficiency; (iii) raise the level of explicit co-ordination; and (iv) lower transaction risks (Wolf et al. 2012). TCT can also be used for analysing the impacts of IOS on transaction structure, and describing IOS on the level of a bilateral business relationship, not on the level of collectives (Reimers et al. 2010; Vaidya 2012).

The other theory dominantly working on HRO and MNE's IOS in common is neo-institutional theory (NIT). NIT's basic assumption in HRO is that MNE's managers are not able to judge reliably the economic effectiveness of their firm's strategies (DiMaggio and Powell 1983). Instead, they heavily consider the peculiarities of the institutional environment or social legitimacy of the host country for their own decision-making. NIT argues that prior decisions

and actions by other firms –particularly, competitors and suppliers– provide legitimisation and information to a decision marked by uncertainty (Wolf et al. 2012). As a result, in case the competitors and suppliers of a certain MNE are home-country dependent, the MNE will also have a relatively strong tendency towards the home-region. From the NIT perspective, the level of IOS use depends on the organisation's needs and resulting isomorphic pressures (DiMaggio and Powell 1983). Thus, institutional forces and factors guiding strategic changes and practices in the organisations have a strong influence on the type of IOS being developed and innovated. Table 3 below summarises the relation of underpinning TCT and NIT between IOS and HRO. It will be largely employed in proposing a conceptual model in the following paper.

Table 3. Two Dominant Theories Supporting HRO and IOS

Concepts on HRO level (Wolf et al. 2012)	**Theory**	**Concepts on IOS level** (Vaidya, 2012)
· Main drivers - Firm-specific preferences - Country-specific advantages · Focus of the theory - Internal and external factors	Transaction cost (TCT)	· Main drivers - Transactional risk reductions - Inter-operational efficiency · Level of analysis - Industrial and technological level
· Main drivers - Competitors' decisions - Suppliers' actions · Focus of the theory - External factors	Neo-institutional (NIT)	· Main drivers - Organisational innovation - Strategic changes · Level of analysis - Organisational level

As specified in the Introduction section, one of the study aims is eventually to apply the proposed conceptual model to the GDS vendors in Japan and Korea. Then, it should be proven first that GDS vendors are home-region oriented MNEs. By utilising a small amount of publicly-opened data, the authors attempt to simply ascertain whether the basic premise is acceptable before heading to the next step of research. Judging from the explanation of Wolf et al. (2012), HRO can be justified when an MNE has largely concentrated its activities (e.g., sales: booking transactions for GDS, assets) within its home-region.

Table 4 below gives an important clue to identifying a tendency in HRO of the worldwide GDS vendors that offer the hosting services to the local vendors by partnership. The output shows that the US- and Europe-based vendors are identified as HRO-like. Two findings justify it in the aspect: (i) the majority of their transactions take place in their home-region where the headquarters are located, and (ii) most assets and resource possessed in the headquarters and IT centres are allocated to their home region.

Table 4. The Output of the Major GDS' HRO Tendency

Transactions share	**AMADEUS**	**SABRE**	**TRAVELPORT** (GALILEO + WORLDSPAN)
Headquarters	Spain, Europe	Texas, US	New Jersey & Georgia, US
Europe	53%	15%	24%
Asia-pacific & Oceania	14%	16%	16%
Middle East & Africa	13%	8%	11%
US & Americas	20%	61%	49%
Main location	**AMADEUS**	**SABRE**	**TRAVELPORT** (GALILEO + WORLDSPAN)
Locations(#) of headquarters and IT operation/service centres	Europe (9)	Europe (3)	Europe (1)
	US & Americas (5)	US & Americas (9)	US & Americas (4)
	Asia-pacific (2)	Asia-pacific (4)	Asia-pacific (2)
	Oceania (1)	Oceania (1)	Oceania (1)

* TRAVELPORT is the owner of two different GDS; GALILEO and WORLDSPAN, but the two GDS are still separate brands each other.

RESEARCH QUESTIONS

The primary and subordinate research questions that derive from the extant academic literature and the industry journals in the context of GDS are proposed as follows:

- *How planning for the local GDS development is practiced between the worldwide GDS vendors and the local GDS ones in Japan and Korea?*

  - how do the two parties co-ordinate their efforts and cooperate with each other for planning the local GDS?
  - what are the potential factors that affect their GDS planning?

RESEARCH METHODS

The form of this research is explanatory; the goals of research are to extend a theory to new issues and link the questioned topics with a general principle (Neuman 2003). This research will use a multiple methods approach accompanying a quantitative analysis, followed by qualitative case studies. Multiple methods, also referred to as a part of the mixed methods approach (Venkatesh et al. 2013) become popular to study complicated socio-technical systems such as IOS in which managerial and organisational aspects often entangle (Dumas et al. 2012). This research involves a series of case studies. The use and acceptance of case study has been growing in IS research in the recent decades (Keutel et al. 2014). Case study research is useful, when a contemporary and ongoing phenomena where the boundaries between situation and context are unclear (Wang et al. 2013; Yin 1994). As Lehmann (2001) and Venkatesh et al. (2013) advise, the purpose for conducting multiple methods is similarly to get insightful information, to develop a deep understanding of a phenomenon of interest, and to establish validity.

This empirical research in the providers' perspective will need a two-step wised data collection and subsequent systematic analyses. The first phase will involve a quantitative study combining e-mail based questionnaire survey; this survey will serve as a guideline for mapping up the next phase enquiries. The second phase will accompany a qualitative case study research with a series of face-to-face interviews. Unit of analysis will be IT and business units of the Japan- and Korea-based four local GDS players. With ethical approval, collection of data will be carried out with managers and executive of the each of two vendors in Japan and Korea, including key secondees from the headquarters of the worldwide GDS.

The first data collection will be scheduled in the middle of year of 2015 and estimated to take for about six weeks. The second data collection, about a three-month long, may be proceeding in 2016. Provisionally, in total four to five months including a period of travelling in a couple of nations will be spent for the two staged data collection. One of the authors, as a former General Manager with a Korean airline, has worked with all the GDS vendors for over 13 years, and has still kept close network and rapport with core people. Thus, it is expected that securing quality answers and holding favourable interviews will be highly feasible.

SIGNIFICANCE OF STUDY

With an original approach, this research will make a significant contribution to IS academia and the travel industry by (i) suggesting a conceptual model of home-region oriented MNE's IOS planning, (ii) bringing the knowledge gap against the worldwide GDS centred studies with a modification of the existing IOS and HRO related theories, and (iii) applying the original, innovative framework to the markets of local GDS. The fact-findings will give managerial implication and practical contribution to the worldwide GDS vendors.

NEXT STEPS FOR RESEARCH

Currently, work is being done on setting out the preliminary conceptual model and further refinement will be completed by the time of conference. Thus, a series of subsequent tasks focused on a pilot data collection and analysis will be carried out. The next steps for research are as follows:

- Completing the conceptual model including an explanation of constructs and factors that affect planning for the locally-used GDS
- By using secondary data, a small-scale testing the proposed conceptual model
- Based on post-positivism cases of MNE's IS, incorporating the conceptual framework into a completed causal modelling
- Refining the proposed model for the main stage of data collection and analyses
- Formulating hypotheses to be examined
- Expanding the worldwide-local GDS research case by other GDS practices corresponding to the rest of the SDLC phases: analysis, design, development, testing, implementation, and maintenance (as a long-term plan)

By means of the future pilot test, development of the up-graded model with significant elements under each factor will have commenced and this will be released through more scholarly discussion.

REFERENCES

Amrollahi, A., Ghapanchi, A.H., and Talaei-Khoei, A. 2013. "A Systematic Literature Review on Strategic Information Systems Planning: Insight from the Past Decade," *Pacific Asia Journal of the Association for Information Systems* (5:2), pp 39-66.

Baltzan, P. 2012. *Business Driven Information Systems* (3rd Ed.). New York, NY: McGraw-Hill.

Banalieva, E.R., and Dhanaraj, C. 2013. "Home Region Orientation in International Expansion Strategies," *Journal of International Business Studies* (44), pp 89-116.

Barrett, S., and Konsynski, B. 1982. "Inter-organizational information sharing systems," *MIS Quarterly* (6), pp 93-105.

BCD Holdings. 2007. *Global Travel Distribution Trends: Tensions and Complexities in the Current Global Distribution Environmen*t. Utrecht, The Netherlands: Author.

Buhalis, D., and Jun, S.H. 2011. "E-Tourism," *Contemporary Tourism Reviews*, pp 3-38.

Bunduchi, R., Graham, I., Smart, A., and Williams, R. 2008. "Homogeneity and Heterogeneity in Information Technology Private Standard Settings," *Technology Analysis and Strategic Management* (20:4), pp 389-407.

Cash, J.I., and Konsynski, B.R. 1985. "IS redraws competitive boundaries," *Harvard Business Review* (63:2), pp 134-142.

Chismar, W., and Meier, J. 1992. "A Model of Competing Interorganizational Systems and its Application to Airline Reservation Systems," *Decision Support Systems* (8), pp 447-458.

DiMaggio, P., and Powell, W. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields," *American Sociological Review* (2), pp 147-160.

Dumas, M., Recker, J. C., and Weske, M. 2012. "Management and Engineering of Process Aware Information Systems: Introduction to the Special Issue," *Information Systems* (37:2), pp 77-79.

Finnegan, P., Galliers, R., and Powell, P. 2003. "Systems Planning in Business-to-Business Electronic Commerce Environments," *Information Technology and Management* (4:2), pp 183-198.

Geri, N., and Ahituv, N. 2008. "A Theory of Constraints Approach to Interorganizational Systems Implementation," *Inf Syst E-Bus Manage* (6), pp 341-360.

Goyal, D.P. 2011. "Strategic Information System Design Practices in an Emerging Economy," *International Journal of Business Information Systems* (7:4), pp 388-401.

Grover, V. 1993. "An Empirically Derived Model for the Adoption of Customer-based Interorganizational Systems," *Decision Sciences* (24:3), pp 603-640.

Hadaya, P., and Pellerin, R. 2010. "Determinants of Construction Companies' Use of Web-based Inter-organizational Information Systems," *Supply Chain Management: An International Journal* (15:5), pp 371-384.

Ibbott, C.J., and O'Keefe R.M. 2004. "Trust, planning and benefits in a global interorganizational system," *Info Systems J* (14), pp 131-152.

Inkpen, G. 1994. *Information Technology for Travel and Tourism*. London, UK: Pitman Publishing.

Johnston, H.R., and Vitale, M.R. 1988. "Creating Competitive Advantage with Interorganizational Information Systems," *Society for Information Management & Information Systems Research Center* (2:2), pp 153-165.

Kang, B. 2006. *Antecedents and Consequences of Electronic Distribution Channel Strategies in the U.S. Lodging Industry: Operator's Perspectives*. PhD dissertation, University of Nevada, Las Vegas, CA.

Keutel, M., Michalik, B., and Richter, J. 2014. "Towards mindful case study research in IS: a critical analysis of the past ten years," *European Journal of Information Systems* (23), pp. 256-272.

Kurnia, S., and Johnston, R.B. 2000. "The Need for a Processual View of Inter-organizatonal Systems Adoption," *Journal of Strategic Information Systems* (9), December, pp 295-310.

Lai, K.W. 2007. "The Strategic Changes by Adopting Internet-based Interorganizational Systems," *Management Research* News (30:7), pp 495-509.

Lee, G.G., Lin, H.F, and Pai, J.C. 2007. "Influence of Environmental and Organizational Factors on the Success of Internet-based Interorganizational Systems Planning," *Internet Research* (15:5), pp 527-543.

Lehmann, H. 2001. *Adapting the Grounded Theory Method for the Study of Information Technology Cases: A Multi-national Example*. Working Paper No. 225, University of Auckland, Auckland, New Zealand.

Lehmann, H. 2010. *The Dynamics of International Information Systems*. New York, NY: Springer.

Madlberger, M. 2012. *Inter-organizational Information Systems and Business Management: Toward a Framework Grounded on Seven Theories*. Hershey, PA: Business Science Reference.

Makipaa, M. 2011. "Planning for Inter-Organizational Information Systems in Practice," *LNBIP 86*, pp. 98-111.

Marshall, P., and Mckay, J. 2002. "An Emergent Framework to Support Visioning and Strategy Formulation for Electronic Commerce," *INFOR* (40:1), pp 3-22.

Mason, K. 2008. *Airline Distribution*. Bedfordshire, UK: Cranfield University.

Merten, P. 2007. "The Transformation of the Distribution Process in the Airline Industry Empowered by Information and Communication Technology," *Information and Communication Technologies in Support of the Tourism Industry*, pp 76-113.

Mohdzain, M.B., and Ward, J.M. 2007. "A Study of Subsidiaries' Views of Information Systems Strategic Planning in Multi-national Organizations," *Journal of Strategic Information Systems* (16), 2007, pp 324-352.

Nelson, M.L., and Shaw, M.J. 2003. *The Adoption and Diffusion of Interorganizational System Standards & Process Innovations*. PhD dissertation, University of Illinois, Urbana-Champaign, IL.

Neuman, W.L. 2003. *Social Research Methods: Qualitative and Quantitative Approaches* (5th Ed.). Boston, MA: Allyn and Bacon.

Puschmann, T., and Alt, R. 2004. "Enterprise Application Integration Systems and Architecture – the Case of the Robert Bosch Group," *Journal of Enterprise Information Management* (17:2), pp 105-116.

Radulovic, L. 2013. "The Role and Potential of Global Distribution System Amadeus for Tourism Development at the Global Level," *Singidunum Journal* (10:1), pp 28-38.

Rao, M.T. 2000. *Information Systems Management in Multi-national Corporations: An Empirical Examination of the Factors Determining the Level and Form of Headquarters Control and Co-ordination over the Subsidiary Information Systems Function*. PhD dissertation, Indiana University, Bloomington, IN.

Raymond, L., and Bergeron, F. 1997. "Global Distribution Systems: a Field Study of their Use and Advantage in Travel Agencies," *Journal of Global Information Management* (5:4), pp 23-32.

Reimers, K., Johnston, R.B., and Klein, S. 2010. "Toward a Theory of IOIS Variance: A New Framework for Studying Inter-Organisational Information Systems," *International Journal of Strategic Information Technology and Applications* (1:3), pp 36-56.

Robey, D., Im, G., and Wareham, J. 2008. "Theoretical Foundations of Empirical Research on Inter-organizational Systems," *Journal of the Association for Information Systems* (9:9), September, pp 497-518.

Roche, E.M. 1996. "Multi-national Corporations – the Emerging Research Agenda," *Journal of Strategic Information Systems* (5), 1996, pp 129-147.

Rugman, A.M., and Verbeke, A. 2004. "A Perspective on Regional and Global Strategies of Multi-national Enterprises," *Journal of International Business Studies* (35:1), pp 3-18.

Rugman, A.M., and Verbeke, A. 2005. "Toward a Theory of Regional Multi-nationals: A Transaction Cost Economics Approach," *Management International Review* (45:1), pp 5-17.

Rugman, A.M., and Verbeke, A. 2007. "Liabilities of Regional Foreignness and the Use of Firm-level Versus Country-level Data: A Response to Dunning et al. (2007)," *Journal of International Business Studies* (38:1), pp 200-205.

Sheldon, P.J. 1997. *Tourism Information Technology*. Oxford, UK: CAB International.

Turban, E., King, D., McKay, J., Marshall, P., Lee, J., and Viehland, D. 2008. *Electronic Commerce 2008: A Managerial Perspective*. Upper Saddle River, NJ: Pearson Education, Inc.

Vaidya, K. 2012. *Inter-organizational Information Systems and Business Management: A Research Framework and an Overview of Key Theories*. Hershey, PA: Business Science Reference.

Venkatesh, V., Brown, S., and Bala, H. 2013. "Bridging the Qualitative-quantitative Divide: Guidelines for Conducting Mixed Methods Research in Information Systems," *MIS Quarterly* (37:1), pp 21-54.

Wang Y.C., Pauleen D.J, and Chan, H.K. 2013. "Facilitating the Merger of Multi-national Companies: a Case Study of the Global Virtual Enterprise," *Journal of Global Information Management* (21:1), January-March, pp 42-58.

Williamson, O.E. 1981. "Transaction cost economics: The governance of contractual relations," *The Journal of Law & Economics* (22), pp 3-61.

Wolf, J., Dunemann, T., and Egelhoff, W.G. 2012. "Why MNCs Tend to Concentrate their Activities in their Home Region," *Multi-national Business Review* (20:1), pp 67-91.

Yin, R.K. 1994. *Case Study Research: Design and Methods*. Thousand Oaks, CA: Sage.

Yun, D.Y., and Lee, D.H. 2005. "Travel-Tourism Common IT Platform," *Journal of the Aviation Management Society of Korea* (1:1), May, pp 2-24.

COPYRIGHT